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March 1904

NO. 4

The Cornell Countryman



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THE CORNELL COUNTRYMAN

Vol. I

MARCH, 1904

No. 4



THE PLOWMAN MAY BE THINKING WHILE HE WORKS

THE FARMERS' READING-COURSE MOVEMENT

II. THE IDEAL FARMERS' READING-COURSE

By S. W. Fletcher

Assistant Professor of Extension Teaching in Agriculture

THE Farmers' Reading-Course is not a recent enterprise.

Ever since the establishment of agricultural colleges it has been felt that some means should be provided for reaching the farmers who were not able to attend these colleges. This feeling has found expression in Farmers' Reading-Courses and in Farmers' Institutes,—two lines of work which have a common aim and which should be more closely affiliated than has been the case heretofore. The first Farmers' Reading-Course of which we have authentic record was established in 1882 by the Agricultural College of Ontario. Farmers' Reading-Courses are now conducted by the Agricultural Colleges of Pennsylvania, Connecticut, Michigan, New York, New Hamp-

shire and South Dakota. The Agricultural Colleges of Indiana, Rhode Island, Texas, Missouri, Tennessee, Virginia and Massachusetts have each established a Farmers' Reading-Course at some time, but have now discontinued it, chiefly for the reason that the farmers did not appear to take an interest in it.

Some of these courses have been moderately successful along certain lines. None of them, including the Cornell Farmers' Reading-Course, has by any means attained to the ideal of what such a course should be, partly through a misconception of the work to be done and partly through insufficient time and funds with which to conduct the work. The ideal Farmers' Reading-Course is merely the opinion

of a person, and this ideal may not be realized in a generation; then it will be no longer the ideal Farmers' Reading-Course because the ideal will have advanced. The writer can merely outline some of the main features of his ideal.

The ideal Farmers' Reading-Course is flexible and democratic. It tries to help all farmers, no matter what may be their degree of intelligence, who desire to learn and to improve their farming. It tries to meet the needs of the farmer who is behind the times as well as the farmer who is up to date. It gives encouragement to the beginner as well as advice to the expert. It tries to help the man who says "farming does not pay," and the man who says "my farm pays me well." This means that the Farmers' Reading-Course is not a definite, prescribed and limited course—a single groove which all must follow—but that it is flexible and adaptive and gives careful attention to the personal needs of each reader.

The reason why some attempts have not been more successful is because they have shot too high. They have outlined very elaborate courses of reading on various agricultural subjects, sometimes recommending books and bulletins whose every page fairly bristles with technical words. Some of these Farmers' Reading-Courses would almost stagger a graduate of an agricultural college. Some of the best educated farmers have been able to use these courses with profit, but they have not appealed to the vast majority of farmers because they are too technical. The majority of farmers have not yet formed the reading habit. They take one or two farm papers and read them quite regularly. Perhaps they occasionally look over an Experiment Station bulletin, but it is my observation that fewer farmers actually read Experiment Station bulletins than is commonly supposed. Aside from this they read very little on agricultural subjects. Nothing could be more impractical than to ask these men to wade through several 300-page books, most of which were written from the point of view of the teacher rather than that of the farmer. It is a misfor-

tune that so many of our agricultural books smack of the lecture room rather than of the soil. The farmer who tries to read them is quick to notice this.

The ideal Farmers' Reading-Course, then, not only suggests a course of reading for those whose experience and education has qualified them to read books and bulletins understandingly, but it also prepares more elementary reading matter for those who would not be interested in this advanced reading. The Cornell Reading-Course Lesson is an effort in this direction. The Lesson should be short—not over eight pages—pithy, practical and abounding in illustrations drawn from farm life. They should be printed on good paper and well illustrated, so that they will catch the eye and invite the attention of the farmer who "is not much of a hand to read." They should be written in the language of the farm, not of the university, and hence are best written by practical farmers, not by teachers. Technical words and long tables of figures should be scrupulously avoided. These Lessons should discuss the principles of agriculture, which can be applied everywhere, not mere practice, which is local and conflicting. The essentials should be distinguished from the non-essentials by difference in type.

The Reading-Course Lesson should not be a syllabus of a book; it should be an illumination of a few very important points. The talk of a successful Farmers' Institute worker may be taken as a type of what the Farmers' Reading-Course Lesson should be. The Institute worker who tries to condense a book into half an hour's talk, stuffing his audience with facts and figures, usually fails to make a "hit." His associate, who states only a few facts and weaves many illustrations around them, leaves his audience well pleased and hungry for more. The Reading-Course Lesson should aim to interest and inspire even more than to instruct. Very little about farming can be told in an eight-page pamphlet, but if we can once get the interest of a farmer by means of these short, readable, well illustrated lessons, it will not be difficult to draw him on to further reading.

Accompanying each Lesson should be some questions on the subject discussed, which the reader should be asked, not required, to answer. There are several features about this "Quiz," as it is called in the Cornell Farmers' Reading-Course, which must be considered very carefully. Such simple, even foolish, questions as "what is food?" and "what is food used for?" should never be included. Farmers very quickly, and I believe justly, resent this imputation to them of childish ignorance. Neither should the questions be those which may be answered by referring to certain para-

graphs in the Lesson itself. As a correspondent has said, "farmers do not like to be examined like school children." I believe that the questions on these elementary Lessons should be mostly those which will draw out the personal experience of the reader and stimulate his observation. The Quiz should not be a catechism. In more advanced reading, when books and bulletins are used, and where a certificate is desired, an examination is necessary; but it is out of place here. The Quiz as an examination paper disheartens many farmers whose interest has been awakened by reading the lessons. In any case, the Quizzes

which are answered should be looked over carefully and returned immediately to the reader, with helpful comments on the answers. The ideal Reading-Course shows progression. The specially prepared and elementary Lessons will have failed in their mission if they do not lead the reader to take up more thorough reading on that subject. At the end of each Lesson, and especially at the end of the series, a list of literature on that subject should be given, and the reader urged to secure it and continue his reading along that line in connection with the Reading-Course.



A FIELD MEETING

Arrangements should be made for supplying books at a discount to Reading-Course members, and free bulletins. But it is not enough to simply recommend books. The Correspondence Course of the Pennsylvania State College has an excellent plan of sending to the members of their Course, with each book recommended, a short outline which explains and emphasizes its most important points and gives the gist of the book in a form easily remembered. The reader should be urged to write to the Reading-Course bureau frequently about his work, and especially to ask any questions about knotty points. These

graphers in the Lesson itself. As a correspondent has said, "farmers do not like to be examined like school children." I believe that the questions on these elementary Lessons should be mostly those which will draw out the personal experience of the reader and stimulate his observation. The Quiz should not be a catechism. In more advanced reading, when books and bulletins are used, and where a certificate is desired, an examination is necessary; but it is out of place here. The Quiz as an examination paper disheartens many farmers whose interest has been awakened by reading the lessons. In any case, the Quizzes

letters should receive prompt and painstaking attention. The elementary Farmers' Reading-Course has now merged into the more advanced reading, called at Cornell the Correspondence Course. This is where some Reading-Courses begin, but it is half way up the ladder; neither is complete without the other.

So far as possible, the members of the Farmers' Reading-Course should be grouped in Reading Clubs. The flame of interest always burns brighter if there are several to attend the fire. Anything which can be done to bring

better than large ones, for all the members should have an opportunity to take part in each meeting.

The club idea should undoubtedly be a leading feature of the Farmers' Reading-Course. It has been the Cornell experience that much greater interest is aroused in clubs than among isolated readers. The individual, not the club, should remain the unit of the course, but a large amount of correspondence may be saved, and a closer touch with the readers secured, if they are in Clubs. Reading-Course meetings give an opportunity for the officers of



A FARMERS' READING-COURSE CLUB

the farmers together for the purpose of talking over their mutual interests is a long step toward correcting the greatest fault which they have, as a class. A Reading Club is formed when a number of neighboring farmers desire to meet together regularly for the purpose of talking over the Lessons and exchanging experiences. Some Granges are organized as Reading Clubs and use the Lessons in their meetings. Some of the best Cornell Reading-Clubs meet from house to house, and are the center of the social as well as the educational life of the farming community. Small clubs are

the Course to meet more of the readers than would be possible otherwise. In the ideal Farmers' Reading-Course at least one good man who understands farmers, and fully sympathizes with their special difficulties, should be in the field all the time organizing Reading Clubs, talking with the farmers about their reading and helping them wherever he can. It is personal contact which counts most; farmers cannot be helped successfully at long range.

The next step is the traveling library. At Cornell this part of the work is conducted with the co-operation of the

State Librarian in Albany. From 10 to 100 books may be sent to a group of people, usually a Reading Club, on payment of a nominal sum which scarcely covers the express charges. These books may be kept six months and may then be exchanged for others. Not over one-third should be on agricultural subjects; the others should be the world's best literature on history, science, biography, travel and fiction; books which make for a broader outlook and higher culture.

The ideal Farmers' Reading-Course is closely associated with the Farmers' Institute work. They are co-ordinate lines of education and should be conducted with particular reference to each other. The logical outcome of a Farmers' Institute is a Farmers' Reading-Club, in which the enthusiasm generated at the meeting shall be carried on throughout the year. Many of the best Institutes in New York state are held in communities where there is a Cornell Farmers' Reading-Course. Conversely, many of our strongest Reading Clubs are formed at Farmers' Institutes. Although it may not be expedient for the Institute work and the Reading-Course to be conducted by the same bureau, there should be a spirit of mutual helpfulness between the two. The Institute workers should lend their efforts to the organization of Reading Clubs wherever they go, and the Reading-Course officers, who are necessarily unable to go out among the farmers as much as Institute workers, should seek the advice of the latter as to how the Reading-Course may be best conducted. I look forward to a more perfect correlation between these two lines of work in the future.

The salient features of the ideal

Farmers' Reading-Course appear to me to be these:

1. It is progressive. It aims to constantly lead the readers to take up more thorough and more advanced reading in the subjects which interest them most.

2. It is flexible. It provides elementary reading for the beginner and more advanced reading for those who are fitted to receive it. The reader is more important than the system.

3. It is personal. The needs of each individual reader should be studied. He should be invited to write to the editor frequently. He should be urged to ask questions about the Lessons or on any other farm problem which puzzles him. These personal letters should be answered promptly and carefully. The correspondent should be made to feel that he has a friend, not merely an instructor, in the editor. The more of this personal element there is in Farmers' Reading-Course work, the more successful it will be.

4. It should make for higher living as well as better farming. With the advent of the Traveling Library, the Farmers' Reading-Course becomes a means of culture as well as training. In it the readers are introduced to books which broaden the horizon and raise the ideals of life. If the Farmers' Reading-Course did nothing but help a man to till the soil better it would still be worth while; but since it tries also to make him a better citizen and a broader man, it appeals to me as one of the most important movements which have been conceived and executed in the spirit of altruism.

AN OLD ENGLISH FARM SONG

Let the Wealthy & Great,
Roll in Splendor & State,
I envy them not I declare it;
I eat my own Lamb,
My Chickens & Ham,
I shear my own Fleece & I wear it.

I have Lawns, I have Bow'rs,
I have Fruits, I have Flow'rs,
The Lark is my morning alarmer;
So jolly Boys now,
Here's, God speed the Plough,
Long Life & success to the Farmer.

WHAT OUR INSECT ENEMIES COST

By *M. V. Slingerland.**Assistant Professor of Economic Entomology*

A RECENT insect bulletin from the United States Department of Agriculture ends with this statement: "It costs the American farmer more to feed his insect foes than it does to educate his children." Mr. F. M. Webster makes this startling comparison after twenty years of experience in investigating and fighting injurious insects, and statistics support his conclusion. A very conservative estimate puts the yearly loss from insect depredations in the United States at one-tenth of all the farm crops, and this amounts to the enormous sum of \$300,000,000, and this is only about \$52 for each farm. A recent estimate by experts put the yearly loss from forest insect depredations at not less than \$100,000,000. The common schools of the country cost in 1902 the sum of \$235,000,000, and all higher institutions of learning cost less than \$50,000,000, making the total cost of education in the United States considerably less than the farmers lost from insect ravages. Thus it would be within the statistical truth to make a still more startling statement than Webster's, and say, that it costs American farmers more to feed their insect foes than it does to maintain the whole system of education for everybody's children.

Furthermore, the yearly losses from insect ravages aggregate nearly twice as much as it costs to maintain our army and navy; more than twice the loss by fire; twice the capital invested in manufacturing agricultural implements; and nearly three times the estimated value of the products of all the fruit orchards, vineyards, and small fruit farms in the country.

We dare not hazard a guess and have no data on which to base an estimate as to how much American farmers are now spending in time and money in the warfare against their insect enemies. It would surely aggregate a sum that would startle us. But

at least 125 entomological workers are now devoting most of their energies and spending probably \$250,000 in the United States in studying injurious insects and devising methods for preventing such enormous losses to American farmers. Massachusetts spent more than a million dollars in trying to exterminate the Gypsy moth, and Congress has just appropriated \$250,000 to fight the Boll-weevil and other troubles in southern cotton fields. Farmers are trying to feed to insects over 2,000 tons of Paris green annually in the United States.

The statistics for New York state also offer some interesting comparisons along this line. The total value of all farm and forest crops, excluding animal products, in New York in 1899 was \$150,000,000, and the one-tenth that the insects got was worth \$15,000,000. It may seem incredible that it costs such a sum to feed New York's injurious insects every year, but it is an average of only \$66 for each of the 227,000 farms in the state; and there are few farms where the crops are not lessened more than this amount by insects. It is admitted that the Codling-moth alone ruins \$3,000,000 worth of apples and pears yearly in the state, and in 1901 the Hessian-fly took half of New York's wheat crop, thus robbing the farmers of \$3,500,000.

From the statistics we glean that their insect foes cost New York farmers each year about one-half what they pay for labor and fertilizers; as much as they get from their potato crop; or for their wheat and corn crop combined; or for all their barley, buckwheat and oats; or as many dollars as there are apple trees in the orchards of the state; or as much as the fruit-growers get from their orchards, vineyards, and small fruit farms.

How much New York farmers are spending in fighting insects, we have no means of knowing, and a guess might be far from the truth, but many

are spending from \$100 to \$500 or more in the warfare every year, so that the aggregate is probably larger than we realize. Twelve to fifteen entomological workers are now spending about \$35,000 in investigation and inspection work in the state yearly to devise ways and means for checking the ravages of insects.

Finally, New York is spending a little more than \$40,000,000 yearly on

its entire school system, or about \$6 per capita. As about 1,000,000 people are living on the farms in New York, the farmers' share of this great educational fund is about \$6,000,000. One may say, therefore, that it costs New York farmers more than twice as much to feed their insect foes as it does to pay their share of the cost of maintaining the schools for educating their children.

SOIL SURVEYS IN THE UNITED STATES

By Jay A. Bonsteel

Professor of Soil Investigation (Detailed from the United States Bureau of Soil)

DURING the early days of the American Union, there was much more land than there were people to fill it so that the interest in the problems of soils and crops centered chiefly in the selection of crops which could be profitably grown under the climatic conditions existing in any given regions. Still there were some who became uneasy in regard to what they considered the "running down" of the land. As the yields of staple crops in the seaboard states decreased and as the population increased, a migration westward was started which settled Kentucky, Tennessee and Ohio. The emigrants were interested in securing fertile lands, and, being shrewd progressive people, they used certain criteria in judging whether the lands of the new domain were suited to the production of the crops with which they were familiar. So they examined the soils to discover whether they were sandy or clayey; they ascertained whether they were black and loamy with decaying vegetable matter or the reverse; they carefully observed the kinds of timber growing and the luxuriance of other wild vegetation. Of course accessibility of location, ease of clearing, supply of wood and water, and defensibility frequently could alone be taken into account, but a more or less accurate conception of soil conditions also

formed an element in the choice of lands.

These pioneers were the first Americans who classified soils, mapped them in their own imaginations and settled according to the results of their seeing and judging.

In 1798 or 1799 the New York State Agricultural Society employed Dr. Samuel Mitchill to examine and report on the soils of the state, and upon its agricultural resources. The results of Dr. Mitchill's investigations were published in the New York Medical Repository for 1800, et seq., vols. 1, 3 and 5.

Between 1820 and 1830 the states of Maine, Massachusetts, New York and North Carolina organized agricultural surveys. In New York State the legislature empowered the formation of a New York State Agricultural and Geological Survey, which made its first report in 1838. The state was divided into four districts under different geologists, and notes on soils and agriculture accompanied the reports of the geologists. The report of William W. Mather on the first district in the first volume of the survey reports is particularly good. It recognizes the influence of the physical and chemical properties of soils and emphasizes the possibility of recognizing in the field, important differences between soils. The final prepar-

ation of the report on the Agriculture of New York State was placed in the hands of Dr. E. Emmons of Williams College. Dr. Emmons made many chemical analyses of New York State soils, correlated or attempted to correlate the soils of the state with what was then known of its geology, and published a rough general map of the soil provinces of the state. The report forms the first of the four volumes on Agriculture in the Natural History of New York. Dr. Emmons was later employed on a similar work in North Carolina.

Among other states active in soil investigation at this time were Rhode Island and Vermont, where chemical analyses were also made. The appearance of Baron Liebig's work on Agricultural Chemistry exerted a potent influence on the character of the work done during the '40s and '50s.

The position of agricultural chemist for the state was established in Maryland in 1847, and the chemist was required to visit each county, spending one month in it, and to enter each election district. He was to analyze specimens of each variety of soil which might be brought to him or he might find to exist. He also investigated marls and other fertilizers. These analyses are at present only of historic interest.

In 1850 Dr. David D. Owens and Dr. Robert Peters began extensive chemical investigations of the soils of Kentucky. Their work was really the inception of the systematic chemical examination of soils in this country.

Beginning in 1858, Professor E. W. Hilgard started an actual areal survey of the soils of Mississippi. He not only employed a correlation of soil materials with geological formations, but also made extensive chemical investigations, and in addition took into account the character of native vegetation as indicating the properties of soils. In 1875 he began the work on the Soils of California, which he has pursued since.

He prepared soil maps of the cotton states for the tenth census of

1879-80, and Killebrew, one of his co-workers, examined tobacco soils.

In 1892 many correlations of soils with geological formations were prepared by different states for exhibition at the World's Columbian Exposition. Maryland prepared, in this year, the first soil map based on the texture and physical properties of soils. The work was done by Professor Milton Whitney, now chief of the Bureau of Soils, United States Department of Agriculture, in co-operation with the Johns Hopkins University authorities.

In 1897 Dabney of the Tennessee Experiment Station made extensive studies of the soils of that state, and published a bulletin and a map which correlated the soils with the geological formations. The bulletin gives not only chemical analyses but also mechanical analyses made by Professor Whitney.

A year later the Division of Soils at Washington made a map of the soils of the Hagerstown valley, Maryland, which has never been published, although the text of the accompanying report was published by the Maryland Agricultural College.

With the year 1899 the work of the soil survey under federal direction began. Methods for the field determination and classification of soils had been devised. These methods were based chiefly on the physical properties of soils such as their texture or coarseness of grain, their structure or the arrangement of grains, on their drainage and to some extent upon their content of organic matter. At the same time methods were devised for field determination of the amounts of alkali found in the arid western soils. Two divisions of the United States were recognized: the humid regions, where it is only necessary to prepare a soil map; and the arid regions where it is frequently necessary to map alkali as well as soil conditions. During the field season of 1899 areas were surveyed or reconnaissance made in New Mexico, Texas, Utah and Colorado of the western division, and in Connecticut and Maryland of the east-

ern division. The publication of the maps and reports on these areas was followed by an extensive demand from other areas for similar surveys. Congress met the demand by specific appropriations which have been continued and greatly increased in succeeding years.

Since 1899 areas have been surveyed in nearly every state and territory, and in Porto Rico and the Philippines. A total of over 34,000,000 acres has already been surveyed, and nearly 300 different types of soils, based on physical properties, have been established.

Co-operation of various kinds by different state organizations has been sought. Thus the Maryland Geological Survey, the State Board of Agriculture of North Carolina, the Louisiana, Utah, Illinois and Ohio experiment stations and Cornell College of Agriculture have all secured federal co-operation in soil survey work of some kind. The recognition of the importance of the work is well shown by the appropriation of \$25,000 by the legislature of Illinois to enable the Illinois station to co-operate in field work and to follow the field mapping by experimental work on farms selected on the more important soil types.

The field work consists in classifying the soils as sands, sandy loams, loams, clays, etc.; in mapping the boundaries of the types established; in ascertaining the best adaptation of various crops to the different soils; in investigating special problems of drainage, of alkali reclamation, of crop introduction, of fertilization, of crop rotation and of farm management; and in reporting an accurate record of the present agricultural condition of the various areas.

The federal Bureau of Soils is not restricted in its investigations by local boundary lines and can generalize its observations on soil types from work done in many different states. Thus the study of soils adapted to various grades of tobacco can be carried on in a wide range of states, and a type of soil suited to the culture, for example of a given grade of wrapper tobacco,

can be mapped in all states where it exists under suitable climatic conditions. In this way the experience of one locality is made available for the direction of other localities.

Again by the mapping of soil types any special information as to crop rotation, the desirability or undesirability of the use of certain kinds of fertilizer on the soil and in general the results of carefully conducted agricultural experiments can be applied with much greater directness and force in regions remote from that in which the original information was gained. A fertilizer experiment means much more to the farmer if he knows the results reported were secured on the same kind of soil he is tilling. Otherwise it means little.

In New York state the following areas have been surveyed by the Bureau of Soils: the Westfield area, comprising northern Chautauqua Co., in 1901; the Big Flats area, in Chemung Co., in 1902, and the Lyons area, in Wayne Co., in the same year; in 1903 the Syracuse-Baldwinsville area and 750 square miles of the western end of Long Island. It is hoped in the near future to increase greatly the amount of territory which can be covered annually in New York state through the co-operation of the Cornell College of Agriculture and the Bureau of Soils. At the same time the young men of the college will be able to secure training in the classification of soils, the modern methods of soil investigation, and in actual field soil survey work. The work will also serve as a basis for certain lines of crop investigation.

The fruit industry of the state, the production of alfalfa, the raising of sugar beets, the reclamation of little esteemed sandy lands, the investigation of market-gardening and trucking soils and other interests as they are presented will be studied not only as relating to soils but also, by the efforts of the University staff, in regard to the other elements which affect crops and the welfare of the entire population.

COW PEAS AS A SOIL RENOVATING CROP

By J. L. Stone

Assistant Professor of Agronomy

SOME items of interest relating to the growing of cow peas in New York are brought out by the co-operative experiments conducted by the extension department of the College of Agriculture. On the college grounds and in most localities in the state where the soils are of the better class for crop growing, the cow pea has not seemed to thrive or promise as good results as does the soy bean, but in the sandy soil of Schenectady and Saratoga Counties the result are reversed and the cow pea promises to become of great value as a soil renovating crop. Many of these sandy areas, though once productive, have, through the loss of organic matter, as the result of long, continued cropping and perhaps bad management, become very barren—in some cases not having produced a farm crop in a dozen years. Cow peas planted upon these soils produce fair crops for green manuring purposes—frequently enabling the farmer to secure a fair crop the following season.

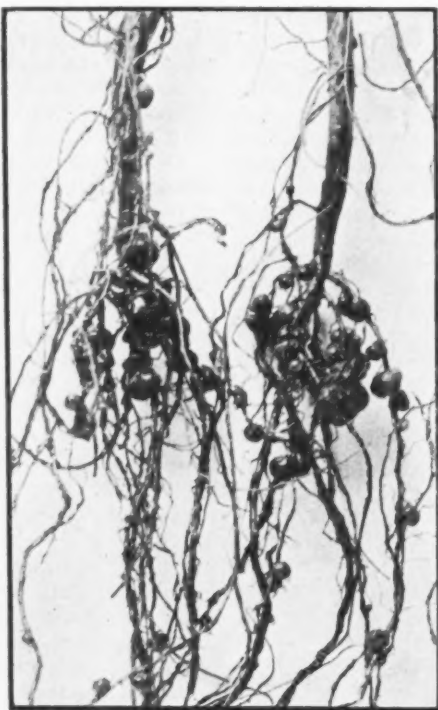
A notable fact in this connection is that the first season that the crop is planted on a given field the nodules upon the roots are few—sometimes it is difficult to find any, but the second

planting upon the same soil results in the production of nodules in great abundance. The illustration, which is of roots grown in southern Saratoga county the past season, shows this well. The supposition is that at the first planting some of the bacteria peculiar to cow peas are introduced into the soil with the seed, but not enough to produce abundant inoculation. By the time of the next planting these have multiplied and disseminated themselves through the soil so as to produce the result illustrated. In one case where a moderate dressing of a complete commercial fertilizer was used the number of nodules present was about doubled. Though it was the first time cow peas were planted on this plot, the nodules were fairly abundant on the unfertilized part.

Soy beans grown in the same soil seem very little inclin-

ed to produce nodules, and it seems probable that artificial inoculation must be resorted to before the latter crop can demonstrate its value as a soil renovator.

At Ithaca neither cow peas or soy beans developed nodules the past season, though planted the second time on the same ground. This may have been due to the cold wet weather.



NODULES OF COW PEAS

A FEW GENERAL PRINCIPLES WHICH INFLUENCE THE KEEPING QUALITIES OF FRUIT IN COLD STORAGE

By G. Harold Powell.

Pomologist in Charge of Fruit Storage Investigations. United States Department of Agriculture

THERE has been little attention given to the general principles governing the production and handling of fruits to give them long keeping qualities. Horticultural investigations have usually ceased with the production of the crop, and the problems connected with its handling and marketing have been considered of a commercial rather than of a scientific nature. In recent years especially an increasing amount of attention has been given to the chemical and physiological changes in fruits from their earliest life to old age and decay, and in this phase of the subject, the principles governing the behavior of fruits in cold storage have received more serious consideration. Investigations of this nature are only in their infancy, but considerable information of importance has already been brought out.

Before the subject can be understood, a fruit must be considered as a living organism. It passes through a life cycle just as a human individual does, and, like the latter, is subject to diseases like the scab and bitter rot, which may cut it off in the prime of life. Like any other organism, its characteristics are profoundly modified by its environment in early life. The character of the soil modifies it, the climate, the altitude, the season, the care of the orchard. These things produce wide variations in different lots of the same variety growing in different orchards, and influence the rapidity with which the fruit passes through the remainder of its life after it is severed from the tree. It is probably safe to enunciate the general principle that any condition in the environment of the fruit which causes it to grow with unusual rapidity or to abnormal size, causes it to pass through its life after picking relative-

ly faster than the same variety when grown more slowly. Quick acting sandy soils, virgin soils, rich bottom lands, excessive tillage with a large waterholding capacity in the soil, quick growing young trees—under these conditions a variety may be expected to have a relatively short life history in storage. In fact there may be a difference of two months in the keeping quality of the same variety grown under different conditions in the same orchard, even if the subsequent handling of the fruit is the same. In the future the fruit storer will need to give more attention to the influence of the orchard conditions on the ripening of the fruit, and in the light of this knowledge handle it from the warehouse accordingly.

To have the best keeping quality and to give the greatest satisfaction to the consumer, fruit should reach full growth and high color on the tree, and still be hard when picked. It has then developed its finest flavors and most delicate aromas; it passes through the remainder of its life relatively slower than immaturely picked fruit; it is less likely to shrivel, and is more resistant to certain storage troubles like the apple scald. It is fallacious to suppose that fruit must be harvested prematurely to insure the longest keeping quality.

As soon as fruit is picked all of its physiological and chemical activities are accelerated in an apparent effort to provide for its reproduction through the ripening of the seed. The rapidity of ripening appears to be proportional to the height of the temperature. If the weather is unusually warm, the ripening processes proceed with corresponding rapidity. They progress more slowly in cooler temperatures.

If the fruit is to be stored, it is necessary to place it quickly in the

cool temperature in order that a large proportion of its remaining life may not be spent in the period between the picking and the storing time. Delaying the fruit in the orchard in warm weather, in piles or in packages, delays in transit, or at the railroad terminal—under these conditions the fruit may have progressed through a large part of its remaining life history before the storage house is reached; the diseases may also have progressed with corresponding rapidity, and the life of the fruit in the warehouse is shortened to that extent.

The chemical and physiological processes in the fruit are retarded to the greatest extent in the lowest temperature in which the fruit can be stored safely without freezing. A temperature of 31 degrees F. to 32 degrees F. retards ripening more than higher temperatures, and lengthens the life of the fruit in the storage house correspondingly. Higher temperatures are satisfactory, if the fruit is to be sold early in the season.

All fruits are not equally adapted to cold storage treatment. The quick

ripening summer fruits are likely to lose their aromas and flavors unless stored in a pure atmosphere. They readily absorb the odor with which they come in contact, and as they are usually removed from the warehouse in warm weather, they deteriorate quickly. Peaches may be stored satisfactorily a week or ten days under favorable conditions, and berries a few days only. But the storage of the tender fruits should be considered only when it is desired to avoid temporarily an oversupplied market, or when it is wished to lengthen the season of a particular fruit for a few days.

Quick ripening summer and fall fruits are injured most by delays in storage, as an hour between the tree or vine and the warehouse means more in the life history of the fruit than a day would mean to a slow ripening winter apple. The summer fruits need storing in small packages from which the heat of the contents can be radiated quickly; and the life of the fruit is lengthened by the use of a fruit wrapper which makes the spread of disease from one fruit to another much more difficult.

THE EXPORT TRADE IN APPLES

By L. H. Weld

A Graduate Student in Agriculture

DURING the last few years there has grown up a steadily increasing demand in foreign markets for American grown apples—particularly in England, Scotland and Germany. Especially has this been true since 1896 when, because of the large crop and consequent large exportations, American apples were first brought within the reach of the common people abroad and their superior quality universally recognized.

Early shipments abroad were not always successful, due to delays in transportation, lack of refrigeration facilities, inexperience in packing for ocean transportation and finally to lack of knowledge of the demands of for-

eign markets. We are slowly gaining knowledge and experience, however; cold storage is available on several lines, and, though the trade is still in its infancy, we now export in good years about three million bushels out of an annual average production of 176 million bushels. Careless grading and packing is still the chief cause of failure. On this point California fruit growers have long been setting Eastern growers a commendable example, but without seeming effect. In summer they ship tender fruit across the continent and even into Europe where it arrives in good condition. Though Eastern grown fruit ought to arrive in better condition, and, being of su-

perior quality, ought to sell better, provided it were equally well grown, graded and packed. The isolation of Eastern growers is to their disadvantage. Many of them are small growers and the orchard is often but a side issue. They have no local organizations which can secure uniformity in grading, and handle fruit enough to gain a reputation for particular brands. Consequently the regrading for export is largely done by storage firms. The Canadians, our competitors for the British market, are fast learning the importance of grading and packing for home as well as for foreign markets, and all fruit is inspected before being sent abroad. Their "Fruit Marks Act, 1901," specifies that every closed package of apples shall bear the name of the variety, the name and address of the packer, the quality of the fruit (indicated by No. 1, No. 2, No. 3, or XXX, XX, X), and that the face shall give a fair representation of the whole package. Packages marked No. 1 or XXX shall contain well grown specimens of one variety, of good color for the variety, of normal shape, sound, of uniform size, not less than 90 per cent free from scab, worm holes and other defects, and properly packed. Uniformity is of great importance in British markets, where apples are retailed by the pound, and it is of great advantage that they should run so many to the pound. What size matters little so long as they be uniform in the barrel, but they prefer the well grown medium sizes to the large ones—three to the pound being a favorite number.

All apples for export should certainly come up to the Canadian No. 1 standard. Some packers will make two or three grades of this class: one of large, high-colored, perfect specimens and another of those of medium size.

These may profitably be wrapped in paper and packed in boxes holding a bushel. In this way the apples of the Northwest are packed for export. In 1901 the Bureau of Plant Industry began sending to London trial shipments of early apples like Yellow Transparent and Early Harvest, wrapped in paper and packed in the six basket Georgia peach carrier. The consignees reported that there will be a demand for such summer apples if well grown and packed. Only the choicest fruit, however, should be put in boxes—the bulk of shipments will probably be in barrels for a long time to come.

In shipping to Germany it is essential to know that inspection for San Jose scale is very thorough, and to send any fruit there not absolutely free from it not only will result in financial failure but injures the reputation of American fruit as well. In Austria also, if a single specimen of scale is found the whole shipment is debarred. Both Germany and Austria import large quantities of apples from Tyrol and northern Italy—fruit that is very well packed but of inferior quality. When these crops fail they must rely on American apples. This year both the German and the British crops were light, and our exports have been of very good quality, which will help the trade for another year. The Canadians have made trial shipments to Australia via Vancouver, but the result was a failure due to lack of refrigeration in crossing the tropics. Some shipments have been made to China, but good packing is necessary, and the demand is mostly limited at present to the foreign residents. With the development of the Pacific carrying trade it is probable that in Hawaii, Australia, China and Japan permanent markets may be found for the products of the fruit growers of the Northwest.

"Who does his duty is a question
Too complex to be solved by me,
But he, I venture the suggestion,
Does part of his who plants a tree."

—Lowell.

The Cornell Countryman

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MARCH, 1904

New Scholarships—The State Grange

Nothing is more significant in the movements that are taking place in farmers' organizations than the growing sympathy with agricultural education. It can be said with truth that the farmers of New York State now stand for the best special and technical education. The discussions of the past two or three years have brought all these educational questions out of their semi-dormant state, and the entire advance guard of the rural population is alert on the subject. The last meeting of the New York State Grange, in Cortland, early in February, contributed a distinctly new feature to the educational movement in voting to establish four Grange scholarships in the College of Agriculture at Cornell University. The details are left to a committee, but the movement itself is important because it is an innovation in educational affairs, and because it sets new problems before the subordinate granges of the state. It is expected that these scholarships are to be awarded as the result of competition between granges. The following plans have been suggested and are under consideration. They seem likely to be adopted in their essential features:

1. Scholarship to be awarded to the county showing the largest per-

centage increase in membership during the year;

2. Scholarship to be awarded to the county showing the largest percentage increase in new granges.

3. Scholarship to go to the subordinate grange showing the largest percentage increase in membership and attendance.

4. Scholarship to be awarded to the boy or girl having the best record for scholarship and best attendance at grange.

It is difficult to overestimate the good that may be accomplished by such a movement as this. It will provide financial aid to worthy boys and girls; introduce a stimulus to intellectual effort amongst farm boys and girls; establish a closer union between the grange and the College of Agriculture, resulting in benefit to both, and spreading the desire for new educational methods; increase the membership in the grange. We believe that this marks a very important departure in grange enterprise, and that it puts the New York State Grange to the very front in matters of education for farmers.

But the State Grange did more than this. It passed a strong resolution calling upon the legislature to pass the bill providing for suitable buildings for the College of Agriculture at Cornell University. It was also committed still further to the enterprise by the attendance of three of its highest officers on the hearing on the bill in Albany, February 9th. Two of these persons spoke for the measure—the Master and the Secretary. The Grange membership is large in New York State, and the grange movement is growing both in numbers and efficiency. It is concerning itself effectively in all public policies that affect the rural districts, and its face is enthusiastically towards the future.

Values of Farm Property

Our agricultural wealth is scattered. We see here and there a large farm, but no individual business that can compare with the largest factories. The farm presents innumerable small enterprises, the factory a small number of large ones. For this reason, the factory makes a great impression on us and we assign undue importance to it. A few statistics from the last census show the importance of the farmer's business. The value of farm property in the United States was over 20 billion dollars, while the capital invested in all forms of manufactures was less than 10 billion. The number of working horses and mules on the farms was over 18 million, while the total horse-power employed in American factories was a little over 11 million. Last year we were greatly impressed with the importance of anthracite coal. The value at the mine of the annual production of hard coal is a little over 75 million dollars, but even so small an item as the annual production of eggs gave twice this amount. If there should be a strike in the egg industry, it would be more serious than the anthracite strike.

The Farmers' Balance of Trade

Much has been said about our "balance of trade," and how important it is that this be favorable. From most of the newspaper discussions of the subject we would infer that the favorable balance is due to our great and growing manufactures. A recent circular from the Department of Agriculture gives statistics on the question.

More than two-thirds of our exports are farm products. During the thirteen years, 1890-1902, the average annual excess of exports of farm products over imports was \$337,000,000.

In the same time there was an adverse balance in products other than those of the farm amounting to \$62,000,000 annually. The farmer offset this unfavorable balance and had left \$275,000,000 as a credit to himself and to the country.

During the past year there was a decrease of over 30 per cent in exports of dairy products, as compared with 1902, and a marked decrease in exports of meat and live animals. Cotton gave a substantial increase. Some of the more important increases in imports were in sugar, molasses and wool. The business of 1903 gives a comparison much more favorable for the farmer than does that of the preceding thirteen-year period. The exports of farm products exceeded imports by \$422,000,000,—a sum sufficient not only to offset the unfavorable balance of \$56,000,000 for products other than those of the farm, but to leave \$367,000,000 to the credit of the nation when the books of the international exchange were balanced.

Texas Cattle Fever

The Texas cattle fever has been added to the long list of diseases that can be prevented by inoculation. Recent numbers of the *Review of Reviews* and of the *Demeter* contain articles on the subject. The disease is not confined to Texas or even to our southern states; but is prevalent in South Africa, South America, Australia and southern Europe, under different names.

For over half a century it has been the ban that has prevented the improvement of southern cattle. Texas was first stocked with cattle from Mexico. These were of very poor quality—better adapted for speed than for beef. Progressive cattlemen of the South have imported valuable pure-blood

animals only to see the great majority of them die.

Nothing was known in regard to the cause of the disease or the manner of its transmission until the subject was taken up by the Bureau of Animal Industry in 1889. It was found to be due to a micro-organism that destroyed the red corpuscles of the blood. It was also shown that the disease was transmitted by infected ticks and in no other way. The suggestion was made that it might be possible to immunize cattle by producing in them a mild attack of the fever by controlled tick infection. No practical use was made of this knowledge till 1897, when the Texas Agricultural College began inoculation experiments, using blood drawn from healthy native cattle. This method is better than controlled tick infection, for the germs seem to gain an added virulence in the body of the tick, just as the malaria germ does in the body of the mosquito.

Since then progress has been rapid. Eight experiment stations in the South have taken up the subject, and have inoculated nearly 5,000 cattle. Less than eight per cent of these have subsequently died of fever. The cattle thus immunized are mostly pure-bloods. They have been scattered throughout the states and will have a potent effect in the improvement of thousands of herds. The Alabama station has recently imported and inoculated several car-loads of Herfords, and they will be sold at auction in June.

This discovery means much to the South. It means the passing of the longhorn "Texas steer," and the coming of the Herford and Shorthorn. The last census report gives the average value per head of all neat cattle in Iowa as \$26.55, in Texas \$17.31, in Georgia \$9.82. If these southern cat-

tle can be raised to the level of the Iowa cattle, it will add millions of dollars to the wealth of the South.

The first bunch of steers of the purely beef breeds, that was ever shipped to Chicago from Louisiana, left the Agricultural College at Baton Rouge last January. These animals were purchased in Illinois when calves. They were immunized against the fever and were grown and fattened on molasses, cotton seed meal, rice bran and native hay, all Louisiana products. This car of steers "topped the market" on the day sold—a substantial credit to the college. Director Bailey was so much impressed with this work on visiting Louisiana last spring that he commended it in the commencement oration at the Louisiana University.

Docking of Horses

A bill to make the docking of horses' tails illegal in the District of Columbia has passed the House of Representatives. Those that are already docked are to be registered, and no more are to be brought into the District. It is to be hoped that the Senate will also pass the bill. A docked horse may have a happy time so long as he is the property of a wealthy man, but when he ceases to lift his feet high enough, and takes his place on some hack and later on a dump cart—well, he is an old horse then, so let the flies bite.

The question is much broader than its humane side, which has doubtless been overestimated by some. It is merely one detail of a great movement. We are gradually emerging from the age when men considered distorted plants and animals more beautiful than natural ones. The tree sheared into some grotesque form is

coming to be less and less common. Men do not now often bend and graft trees into fantastic devices. We are coming more and more to appreciate the individuality of plants and animals as well as of men. Time was when the gardener sheared all his shrubs to one form, and pruned his trees to one style. Some still do so, but the number is growing who believe that the pruning should be of such a nature as to preserve the individuality of the plant. The same forces that are trying to preserve the beauty of our natural scenery should strive to preserve the natural beauty of our animals. Those who love horses third-hand—through a coachman and groom—may consider the docked tail an improvement; but for one who has loved a real horse first-hand it is different. Can you imagine Rosa Bonheur painting a "Noble Charger" with a bobtail?

Profits of Garden and Orchard

In the February *World's Work*, Mr. B. T. Galloway, Chief of the Bureau of Plant Industry, has an inspiring article on intensive horticulture. The horticulturist raises perishable fruits and vegetables, and to offset the risks he takes, he must bring science and experience to his aid. By concentrating attention on details and management, he may make a living from a single acre; or by the application of the same principles on a large scale, may become a "peach king."

An instance is given of a western man, who, on a single acre, made a profit of \$1,000 a year from strawberries, celery and garden vegetables. To do this he had to work constantly, with both hands and brains. Rotation of crops was practiced even on this small area. Stable manure en-

riched the land, and phosphates made his berries firm and bright. His celery was kept from disease by the practical application of the discoveries of the laboratory. This was a striking instance of the fact that the union of scientific and business knowledge gives success.

An eastern man made his living from two acres of grapes. The needs of the market were carefully studied, varieties selected whose fruit would ripen in succession. Spraying was done for fungi and insects. The fruit was bagged to make its ripening perfect.

The wornout farms near the large cities present an excellent field for the horticulturist. Virgin soil is rare, and is not as important as good markets, facilities for rapid transportation and ability to secure labor. One man who had been employed in scientific investigation, bought five hundred acres of wornout land near Washington for three dollars an acre. With no available capital to improve his farm, except what he could save from each year's crops, he gradually increased the fertility of his soil, and planted orchards of apple, pear and peach trees. To-day the farm is worth fifteen thousand dollars, and is rapidly increasing in value as the trees are coming into bearing.

Side by side with scientific knowledge, must be up-to-date business practices. Packing, storing, shipping, all play important parts. Cold storage has lengthened the fruit seasons. The government has aided fruit growers in securing European markets, and our peaches are beginning to be shipped to London. Mr. Galloway concludes by urging the young man to come East and go into horticulture.

GENERAL AGRICULTURAL NEWS

The first text-book of agriculture published in the United States was printed in Ithaca in 1837, by Mack, Andrus and Woodruff.

* * *

The Bureau of Forestry has been asked to make working plans for the management of 1,300,000 acres of timber lands for the Weyerhaeuser Timber Company of Washington. The field work will begin next summer. The Northern Pacific Railway Company has also requested that the bureau prepare working plans for its enormous holdings in Washington and Idaho. This work is done "in pursuance of investigations in forestry, and in order to disseminate a knowledge of improved ways of handling forest lands." The bureau pays the salaries of the foresters, and reserves the right to publish the plan and its results for the information of lumbermen and others whom it may concern. The owner of the tract pays the expenses of living, travel, etc.

* * *

Hon. H. C. Adams of Wisconsin, has introduced a bill in the House of Representatives to provide for an increased annual appropriation for agricultural experiment stations. The initial increase named is \$5,000, with an additional \$2,000 a year until a total of \$15,000 is reached. These funds are "to be applied only to paying the necessary expenses of conducting original researches or experiments bearing directly on the agricultural industry of the United States." At present each state receives \$15,000, an amount entirely too small for the work to be done.

* * *

Vermont, the home of Justin Morrill, the father of the Land Grant colleges, has been forced to close the doors of its dairy school for lack of funds. In twelve years of existence it has turned out 600 students. May the state legislature be made to see its mistake and provide means to continue the education of the farmers' sons.

The Agricultural College of the University of Missouri is to start a publication to be called the *Missouri Agricultural College Farmer*.

* * *

The government of Rhodesia, South Africa, has established an experiment station.

* * *

A correspondence college for agriculture has been organized at Sioux City, Iowa. The courses of study offered include animal husbandry, agronomy, veterinary science, stock-feeding, stock-judging and other subjects.

* * *

The trustees of the Iowa Agricultural College have agreed upon the following items that should enter into the budget to be presented to the legislature: for increase in the support fund annually, \$100,000; for various repairs, equipment, etc., \$146,500; for increase in the experiment station funds, \$65,000; for new buildings, \$200,000; for dairy farm land, \$25,000, a total increase of \$536,500 for the biennium. The people of Iowa will doubtless see that these appropriations are made, for they greatly appreciate the work of the Agricultural College. In a public speech the governor has recommended a much larger appropriation than the above increase would make. Some interesting items in the budget are amounts for agricultural engineering, extension work, and for investigations on corn, soils and good roads.

* * *

Alumni and ex-students of the Iowa Agricultural College have formed an Agricultural Union. The society is similar to our Experimenters' League in its objects and methods of work.

* * *

A bill has been introduced in Congress to establish a Bureau of Public Highways in the Department of Agriculture. The importance of this line of investigations would seem to be sufficient to warrant the establishment of such a bureau.

CORNELL NEWS

CAMPUS NOTES

One of the most valuable features of the work of the Agricultural College this year is the Assembly. Twice every month all of the agricultural students meet in Barnes Hall. Professor Bailey speaks on some topic of interest, after which the students sing college songs and have a good time. The meetings can only be fully appreciated by those who have been there. Nothing could better unify the students and create an enthusiasm for the work and for Cornell. At the first meeting in February, Professor Bailey spoke on organization among farmers. Organization of farmers' interests is exceedingly important. Farming is the fundamental and primary occupation. From it other occupations crystallized out, and as rapidly as they have crystallized out they have organized. Farmers were the last to organize definitely. He gave a brief history of some of the earlier efforts to organize, and of the struggles and work of these societies. George Washington was one of the leaders in this work in his time. When you leave the college you should join the grange, the horticultural clubs. If there is no organization, then start one, a farmers' reading club, if nothing else. You cannot fail in that. Work for the betterment of the school, the church. Take part in the affairs of life. Sink your own likes and dislikes, and hang on.

* * *

Poultry husbandry on an equal footing with other branches of agriculture is a new departure. In view of this fact, it is very gratifying to note the interest taken by the short course students. Out of 43 students in the general winter course in agriculture, 30 chose poultry husbandry for their elective course.

* * *

A full report of the proceedings of the Experimenters' League is being prepared for the Commissioner of Agriculture with the expectation that he will publish it.

The announcements of the summer session at Cornell are now out. The nature-study outlined promises to be intensely interesting and very practical. Professors Bailey and Coulter and Mrs. Comstock will give a course of lectures on the history and development of the nature-study idea. Professors Atkinson and Coulter and Mr. Whetzel will give lessons on plant life. Mrs. Comstock will have field work with insects. Professor McMurry offers a course on the selection of materials for nature-study, and Principal Emerson treats the subject from the standpoint of the grammar schools. There will be field work in elementary earth science; how the soils are made, the work of the brooks, etc. Mr. Warren will give a course on the crops, stock and orchards of the University farm. Cornell is especially favored in its location for this study. The Campus is close to the fields and woods where the materials will be gathered, and the surrounding country is exceedingly varied in its physiography.

* * *

Hereafter the Agricultural Association will meet in Morrill Hall in the recitation room. This room has been provided with new seats and generally improved, so that it makes a pleasant meeting place.

* * *

Dr. John Gifford, who was assistant professor of forestry last year, has gone into tropical horticulture at Cocoanut Grove, Florida. He is growing citrus fruits. Professor De Garmo of the department of pedagogy is interested in a similar enterprise. Quite a number of Cornellians are now engaged in horticultural work in southern Florida.

* * *

C. B. Hover and Modesto Quiroga, graduates of the Ohio Agricultural College, have taken up graduate work in agriculture. P. L. Del Carrill, a graduate of the Ohio Veterinary College has also entered agriculture here. Mr. Quiroga and Mr. Carrill are from Argentina.

Former work of the Experiment Station on potatoes has had to do with investigations of the effect of tillage and spraying on yield. Mr. Gilmore is now studying the effects of various factors upon cooking quality.

* * *

The first of the series of non-resident lectures to be given before the students in poultry husbandry was given by Mr. T. F. McGrew, a noted poultry writer and judge from New York city. He spoke on preparing fowls for the show, giving in a clear, concise way the necessary steps in fitting a fowl for exhibition. The first step is in choosing the parent of the specimen. Only the most nearly perfect fowls should be mated to produce an offspring for exhibition. From the time that the chick is hatched the best care must be taken to produce a strong vigorous bird with glossy plumage and general healthy appearance. Care must be taken in feeding white birds so as not to give their plumage a yellow cast. Perfect cleanliness is required, and all birds, whether white or black, should be thoroughly washed with soap and water. Before exhibiting, the birds should be handled sufficiently to become accustomed to it. There is money in raising exhibition poultry, but the beginner should at first make it secondary to egg and meat production. Much money has been lost by men, who, without any practical knowledge of the poultry business, have built poultry palaces and started out to raise fancy birds. The lecture was thoroughly enjoyed by the students. He also gave a demonstration of scoring, and a lantern lecture on the different breeds.

FORMER STUDENTS

THE CORNELL COUNTRYMAN wants very much to get in close touch with all our former students. This means that we don't want you to wait for us, but write at once. If you have a good thing, pass it on! At least let us know where you are and what you are doing. Such information is of great value to the College as well as to

COUNTRYMAN readers. The editors earnestly request all our readers to unite in helping us with information of this kind. With all our former students loyally supporting it, THE CORNELL COUNTRYMAN can not fail of a thoroughly useful and successful career among the agricultural college publications of the day.

Ex. '72.—Wing R. Smith is secretary of the Smiths and Powell Company, which owns the Lakeside Stock Farm and Syracuse Nurseries at Syracuse, N. Y. The firm is advertised in the CORNELL COUNTRYMAN for December.

Ex. '73.—J. T. Duncan, after leaving Cornell, graduated from the Ontario Veterinary College and afterwards became professor of anatomy in that institution. In 1882 he graduated from the medical department of the Toronto University. He is now professor of anatomy in the Women's Medical College, besides holding his professorship in the Veterinary College. Dr. Duncan writes that reading THE COUNTRYMAN reminds him of the happy days he spent at Cornell. While here he roomed with Dr. Jordan, now of Leland Stanford University.

Ex. '84.—G. M. Carpenter is manager of the Farmers' Dairy Company of Wilkesbarre, Pa.

Ex. '88, B. S. in Agr.—John W. Stanford is at Warwick, N. Y., agent of the Greenwich Insurance Company.

'88, B. S. in Agr.—Leonard Pearson is dean of the veterinary department of the University of Pennsylvania.

'90, Special.—H. P. Matthews has a 100-acre farm at Albion, N. Y., where he is engaged in stock raising and general farming.

'92, Special.—Fred E. Ford has a fruit farm at Elba, N. Y.

'92, B. S. in Agr.—F. L. Mulford, who returned for graduate work in 1893, is superintendent of parks at Harrisburg, Pa., and is doing good work in the way of civic improvement.

'93, Special.—Asa H. Smith is farming at Clifton Springs, N. Y., in partnership with his brother, Adeltus E.

Smith, Cornell, '80. He is a prominent granger, of which organization he has been a lecturer for the past four years. Mr. Smith attended the meeting of the New York Agricultural Experimenters' League at Ithaca, N. Y., last January.

'96, B. S. A.—Glen W. Herrick is professor of biology in Mississippi College of Agriculture and Mechanic Arts.

'96, Dairy.—W. J. Bell has been in school at Albany but expects to return to his home at Brasher Falls, N. Y., sometime this month.

'97, Special.—Arthur J. Pierpont is running a large dairy farm at Waterbury, Conn. Last June he was elected trustee of the Connecticut Agricultural College.

'00, Special.—A. L. Richie is now located at Moorestown, N. J., with Horace Roberts, a prominent horticulturist of the state. Mr. Richie has recently been visiting Mr. Albertson, Cornell, '00, of Taughannock, and a few days ago ran down to see how things were looking on the old campus. These little "home comings" of former students are good for all concerned. We wish there might be more of them.

'01, M. S. Agr.—V. H. Davis, '00 B. S., Ohio State University, is assistant professor of horticulture at the Ohio State University and business manager of *The Agricultural Student*.

'01, Winter.—O. E. Williamson. It was at a farmers' institute that Mr. Williamson first conceived the idea of taking a short course at Cornell. Since then he has held positions of trust and responsibility, first with the Baron de Hirsch School of Agriculture, and at present on the estate of Mr. J. W. Vanderbilt at Hyde Park-on-Hudson. Mr. Williamson says, "There is one feature of the good work that the College of Agriculture is doing, which, I think, should be brought before your readers and all farmers' institutes. This is the reading course lessons for farmers and farmers' wives. I know of no way in which the farmer may be more benefited, unless he or his sons pursue a course at Cornell.

'01, Ph.D.—W. M. Munson is professor of horticulture in the University of Maine.

'01, Winter.—J. C. Walker worked for his father two years, but last spring cupid got the better of him, and he now has a wife and is established as proprietor of the home farm at Linwood, N. Y.

'01, Dairy.—Francis E. Ellis is upholding the reputation of his dairy training at Cornell by the quality of butter which he is making at Rock City Falls Stock Farm. His product supplies a fancy trade in Saratoga Springs, Troy and New York city.

'02, Winter.—M. C. Jones, '03 Dairy, is in charge of the dairy on a 1,000 acre estate at Dansville, Pa., owned by Mr. John Bennett of N. Y. city.

'02, Winter.—Herbert G. Potter married Miss Mabel Gardiner of New York city, January 4, 1904. Mr. and Mrs. Potter will reside at their home on the Ridge road, Glens Falls, N. Y.

'03, Special.—Alice Putnam sends her subscription from Station H, Washington, D. C.

'03, Winter.—Walter G. Phillips is at Bristol, N. Y.

'03, Winter.—J. Raymond Dillin is at Adams Center, N. Y. He expected to attend the Agricultural Experimenters' League last January but was unable to do so.

'03, Winter.—Marvin Croop is an interested subscriber from Clarence Center, N. Y. At present Croop is not farming it, but we shall not be surprised to hear some day that he got homesick for the old farm, and is back living the strong, free life of the country again.

CLASS OF 1891

'91, B. S. Agr.—Horace Atwood, '98, M. S. Agr., after graduating was engaged for several years in farming and the operation of creameries. In 1897 he was appointed to his present position as assistant agriculturist at the West Virginia Agricultural Experiment Station. Professor Atwood is joint author of ten of the experiment station bulletins.

'91, Special.—Emerson T. Brown has a dairy and runs one of the milk routes in the city.

'91, Special.—Effie B. Earll is now the wife of Professor M. V. Slingerland. Mrs. Slingerland's colored lantern slides of insects are the finest of their kind in the world.

'91, B. S. Agr.—Charles T. French, after graduating, went into the employ of Messrs. Frederick, Law, Olmsted and Company, landscape architects, Brookline, Mass. He then entered into partnership with C. E. Doffin, architect, Cornell, '90, and engaged in landscape gardening, with headquarters at 156 Fifth avenue, New York city. Mr. French spent the latter part of the spring and summer of 1896 in England, studying its parks and private country places. He is now permanently located as landscape gardener at New Hartford, N. Y.

'91, Special.—Ray T. Hazeltine followed dairy farming for three years, and then secured employment with the Standard Butter Company of Owego, N. Y. He continued in the company's employ until last spring when he was successful in civil service examinations and was appointed a substitute railway mail clerk. Mr. Hazeltine's address is Owego, N. Y.

'91, B. S. Agr.—Samuel Jeffrey is farming at Marion, N. Y.

'91, B. S. Agr.—Thomas L. Lyon went to the University of Nebraska in the fall of 1891 to take the position of instructor in chemistry and assistant chemist in the Agricultural Experiment Station. He held this position until 1893, and then went to Germany and studied for a year in the Agricultural Chemical Laboratory at the University of Gottingen. He resumed his former position at the University of Nebraska in 1894, and the following year was appointed associate professor of agriculture. Since that time he has become professor of agriculture and associate director of the experiment station. In 1898, Professor Lyon was in charge of the dairy test at the Trans-Mississippi Exposition. He is a member of the American and German chemical societies, the Society

for the Promotion of Agricultural Science, and is a contributor to the journals of these societies, and is also the author of a number of experiment station bulletins.

'91, B. S. Agr.—Wilbur J. MacNeil received his master's degree in 1892 and is probably still teaching in the high school at Petaluma, California.

'91, Special.—Henry D. Martin, '93, V. S., Ontario Veterinary College. Since 1893 Dr. Martin has been practicing veterinary medicine in Buffalo, having his office and hospital at 481 Rhode Island street. His practice is mostly city work, with quite a lot of cattle practice in dairies located near the city. In 1901 he was associated with Dr. John Wende as official veterinarian of the Pan-American Exposition.

'91, B. S. Agr.—Clarence W. Matthews was for ten years horticulturist at the Kentucky Agricultural Experiment Station. He is now professor in charge of the department of agriculture, horticulture and botany, and dean of the agricultural course.

'91, B. S. Agr.—Sherman D. Maynard is a physician at Roscoe, N. Y.

'91, Special.—Albert H. Peirson is proprietor with his brother, F. J. Peirson, of the Maple Grove Nurseries at Waterloo, N. Y. They have an advertisement in our January number.

'91, B. S. Agr.—Charles H. Royce received his master's degree in '92, and is now superintendent of Castle Grove Farms, the estate of L. P. Horton, Danville, Pa. Mr. Royce made one of the opening addresses at the annual meeting of the New York Agricultural Experimenters' League, which met in Ithaca last January.

'91, B. S. Agr.—W. E. Rumsey has been located at the West Virginia Agricultural Experiment Station since leaving Cornell in January, 1893. He is now entomologist in charge, and is also state inspector of orchards and nurseries.

'91, Special.—Frank E. Rupert upon leaving Cornell immediately took up nursery work in connection with

their firm, W. P. Rupert & Sons, of Seneca, N. Y., and has been steadily grinding away at it ever since.

'91, Special.—Wm. Salant changed to science and received his B. S. degree at Cornell in 1894. He took a year of graduate work in biology at Columbia, the following year entered the College of Physicians and Surgeons there, and graduated from the University in 1899. In 1901 he was appointed to a research fellowship in the Rockefeller Institute for Medical Research, which he held for three years. He was assistant in physiology in the Cornell Medical College of New York city in 1902-'03, and since then has been lecturer in physiology in the New York Normal School of Physical Training. Mr. Salant has published several scientific papers in European and American publications.

'91, B. S. Agr.—Edwin S. Van Kirk is on his farm at Newfield, N. Y.

'91, B. S. Agr.—Jared Van Wagenen, Jr., was the orator of the class of 1891. On looking up the com-

mencement program for that year we see that Mr. Van Wagenen delivered a commencement oration entitled "Our Present Agricultural Depression." As history goes the agricultural students were so appreciative of the efforts that an enormous hamper of roses had been provided outside the Armory, and on the completion of the oration it was passed in through the window and presented to the young speaker on the stage. Mr. Van Wagenen's home is at Lawyersville, N. Y., on Hillside Farm, which has received the care of father and son, and has been in the family continuously for over 100 years. In addition to his farm duties Mr. Van Wagenen is an active institute lecturer throughout the state, and a frequent writer for agricultural journals.

The following special students left with the class of 1891 and we know nothing more about them: Albert H. Berry, David K. Dickinson, James C. Duffey, George L. Gridley, Homer Heath, Helcias de Oliveira.

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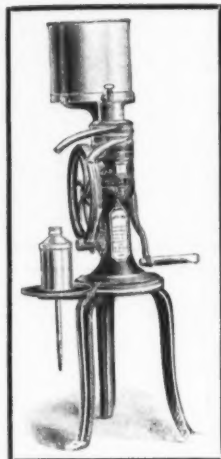
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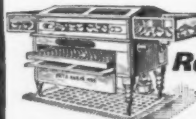
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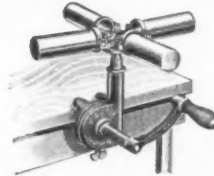
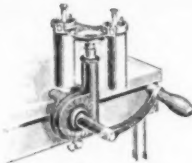
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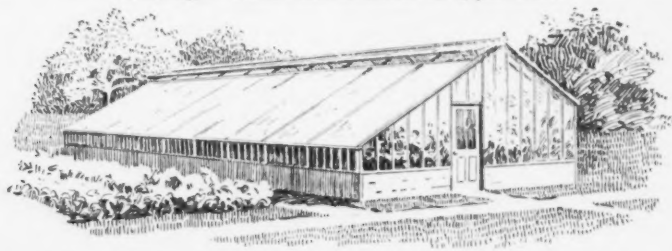
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